RAYN Growing Systems

Alina Luminaire and Power System

Research Lighting Systems

ALINA LUMINAIRES AND POWER SYSTEM

Optimized for photobiological research, Alina is an advanced modular luminaire system offering six standard and up to two custom wavebands, and several advanced control features for detailed experimentation and laboratory work.

The Alina lamp head has a uniquely low profile for use in shelf-based growing systems and is IP65 rated*, convection cooled, and operates on a safe, low voltage connection from its remote Alina Power System unit.

Multiple Alina units may be ganged together to make arrays of any arbitrary size, with no de-rating of capacity. Units may be connected and operated independently or combined as a single block. The Alina system can be configured remotely at a RAYN Touch controller for complete control of all wavebands of each lamp head individually or in combinations.

Each waveband can be dimmed smoothly from 0–100% in steps of 1% or less. Stable dimming is achieved at any setting, including at very low levels. There is no 10% minimum level as in many other luminaires.

Additionally, a separate Gate control input is provided on the Alina Power System unit allowing instant on/off modulation of the output of every connected lamp head. This control may be used to experiment with 'Global PWM' (patent pending) where all lights in a growing zone pulse in exact synchronization at a frequency and mark-space of the user's choosing, for 'Power Pulse' (patent pending) to excite a fluorescent response for image capture and for shutter control for 'Multispectral imaging by sequential illumination' (patented). The precision of control both of dimming and modulation offers experimental possibilities not available in any other horticultural luminaire.

Each lamp head is fitted with a standard set of six colors: white, blue, lime, green, deep red, and far red. These offer coverage of the main photobiologically active wavebands for plant growth. Additionally, the user may specify up to two additional colors of any waveband. Example custom colors include violet, cyan, amber, IR and so on, or simply more of an existing standard color, if required.

Alina luminaires operate on a safe 60 VDC supply from a central power and signal unit. Alina Power System units are available in 350 W, 600 W and 1500 W variants. Easily connect larger or more dispersed systems with minimal wiring via an optional remote power/signal distribution box. No separate data connection is necessary as the data, including the Gate signal, travels on the same cable as the power.

Lightweight and compact, Alina lamp heads may be easily suspended on wires or built into a shelving system, requiring connection of a single waterproof connector and may be replaced with minimal effort. Units may be hung to project light downwards or sideways with equally effective cooling, operation and water resistance.

*IP65 rating: no dust ingress; sustained water spray from all directions.

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ORDERING INFORMATION

MODEL	DESCRIPTION
ALINA	Alina Lamp Head, six standard wavebands
A-USERK	Alina User Kit, add any two wavebands to an Alina lamp head
A-BAFFLE	Pair of screw-on rotatable vanes to control light spill
A-DIFFM	Alina Diffusion Medium, low loss micro lensed insert
A-DIFFW	Alina Diffusion Wide, low loss micro lensed insert
APS 350E	Alina Power System 350E CE
APS600UL or APS600CE	Alina Power System 600 W (UL or CE)
APS1500UL or APS1500CE	Alina Power System 1500 W (UL or CE)
A-DISTRO	Alina Power System Distribution Box for up to 8 Alina lamp heads
A-L3	Alina L Cable, from APS/Distribution Box to lamp head, 4 A, 3 m (9 ft 10 in)*
A-L10	Alina L Cable, from APS to lamp head, 4 A, 10 m (32 ft 10 in)*
A-L30	Alina L Cable, from APS to lamp head, 4 A, 30 m (98 ft 5 in)*
A-D10	Alina D cable, between APS and Distribution Box, 20 A, 10 m (9 ft 10 in)*
A-D30	Alina D cable, between APS and Distribution Box, 20 A, 30 m (98 ft 5 in)*
APS1500HBH	Hanging bracket kit for APS 1500 power supply - hook style
APS1500HBW	Hanging bracket kit for APS 1500 power supply - wire style
A-2X	Bracket kit to attach two Alina lamp heads side-by-side
A-4X	Bracket kit to attach four Alina lamp heads side-by-side
A-6X	Bracket kit to attach six Alina lamp heads side-by-side

*Other cable lengths can be supplied to order.

ALINA WAVE BANDS

Alina standard wavebands include 256 LED chips providing colors as follows:

COLOR	DESCRIPTION
White	5000K High Efficiency White
Blue	451 nm Indigo Blue
Lime	Broadband phosphor-converted pale green centered around 548 nm
Green	525 nm Deep Green
Deep red	665 nm Deep Red
Far red	735 nm Far Red

Optional colors may be provided from any standard LED chip from most major manufacturers. Optional colors are arranged as 8 chips of each color, to a total of 16 additional LED chips. An Alina lamp head with the optional colors fitted has 272 LED chips.

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SPECIFICATIONS

Optical
- The standard poly-carbonate high-strength front lens is optically clear and provides a 120° beam spread. It may be fitted internally with an optional low-loss diffuser for improved beam homogeneity. Diffusers are available with medium or wide dispersion angles.
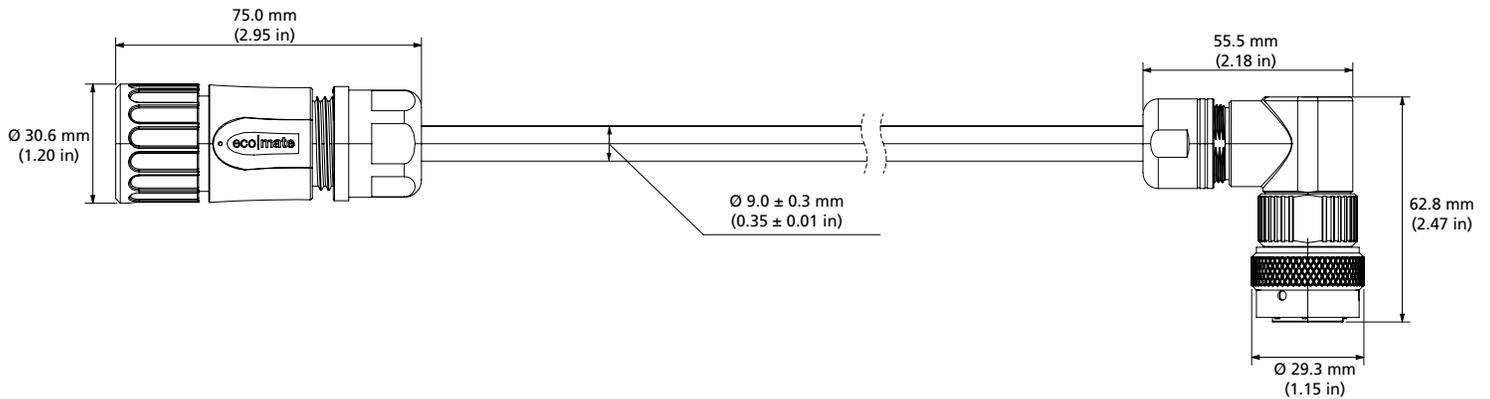
Control
- Ethernet sACN via standard Cat5, Cat6, Cat7 network cable on RJ45 connector
- DMX-RDM Remote Device Management between lamp head and power unit providing remote configuration and addressing; no need to set local controls on the lamp head
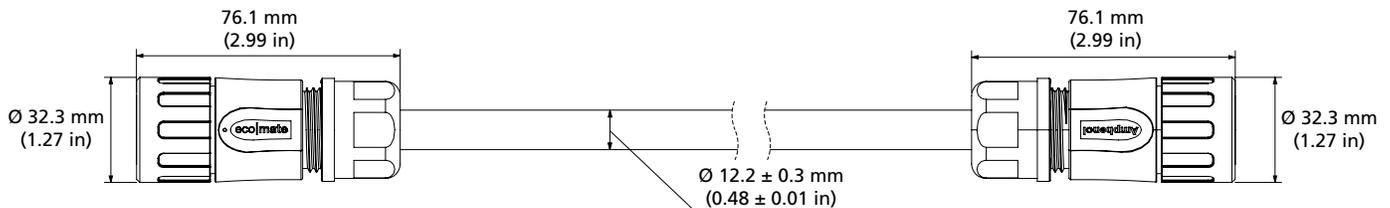- Additional input for master Gate signal on 3-pin XLR

Dimming
- High–resolution digital dimming on each waveband, from 0–100% with better than 1% accuracy and repeatability
- Ultra–stable operation at all levels including below 10%
- Hybrid variable current / variable pulse-width dimming for minimal output ripple
- Instant on/off gating via the remote Gate signal
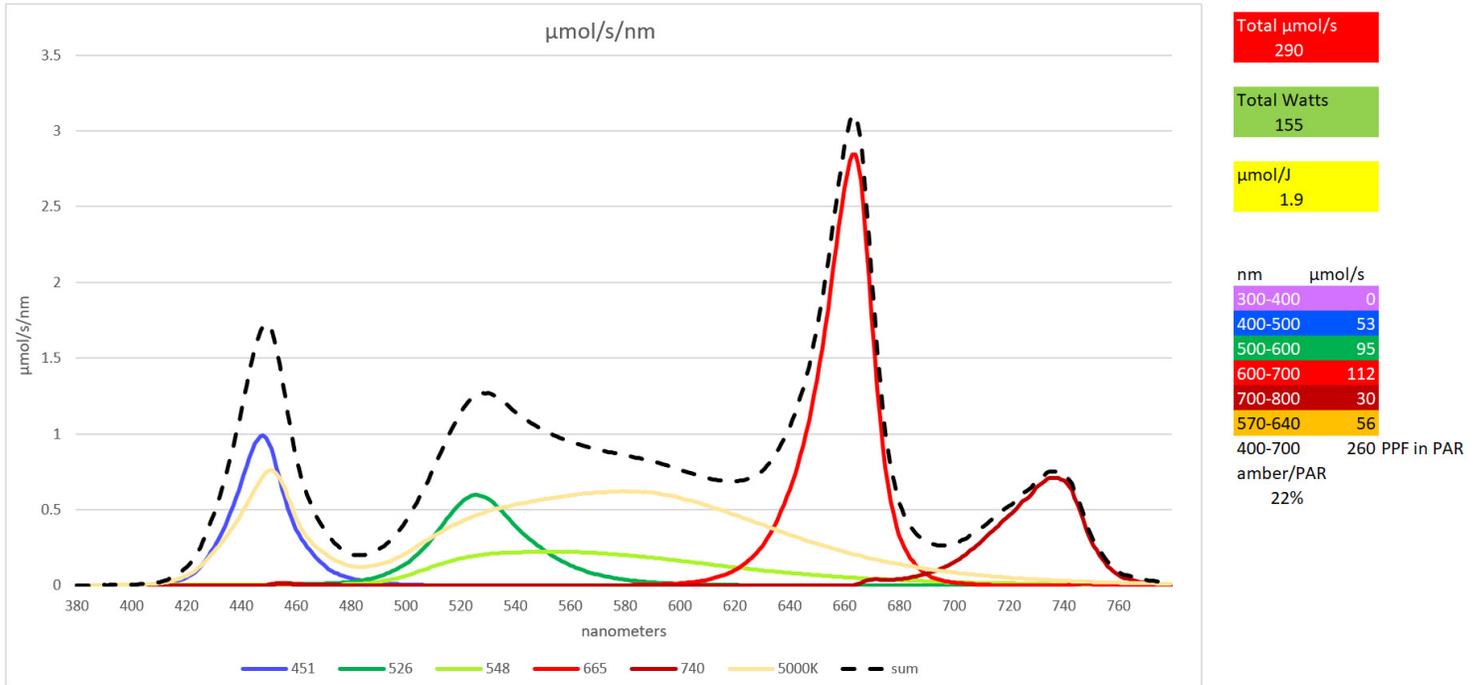
CABLE INFORMATION

ALINA L Cables

ALINA D Cables

RADIANT FLUX

- Total flux = 290 µmol/s of which:
  - White = 93 µmol/s
  - Colors = 197 µmols/s (not including Alina color options or custom colors)

Chart: µmol/s/nm (legend: 451, 526, 548, 665, 740, 5000K, sum)

Total µmol/s	290
Total Watts	155
µmol/J	1.9

nm	µmol/s
300-400	0
400-500	53
500-600	95
600-700	112
700-800	30
570-640	56
400-700	260 PPF in PAR
amber/PAR	22%

Note: Lamp head efficiency = 1.9 µmol/J. Additional losses occur on the Alina Power System depending on loading and pattern of usage.

CONTROL CHANNEL MAP

*preliminary data

CHANNEL	DESCRIPTION
1	Master Intensity
2	Blue
3	Lime Green
4	Deep red
5	Green
6	Far red
7	White
8	Option #1
9	Option #2

ALINA POWER SYSTEM CAPACITY GUIDELINES

ALINA Power System Unit	ALINA Lamp Head Standard, all at 100%	ALINA Lamp Head w/ User Kit, all at 100%
Wattage per Lamp Head	161 W	181 W
APS 600	4 lamp heads	3 lamp heads
APS 1500	9 lamp heads	8 lamp heads
Distribution Box (1200 W)	7 lamp heads	6 lamp heads

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PHYSICAL AND ELECTRICAL INFORMATION

Alina Lamp Head

- Power 200 W max., Class 1 electrical
- 60 VDC, Must be powered from an Alina Power System unit, see below
- IP65, for wet locations
- Dimensions 595x148x52 mm (23.4x5.8x2.0 in)

Alina Power System 350E (APS 350E)

- 350 W nominal rating
- Two lamp head outputs, each protected at 4 A with own fuse
- Fuse status indicator for each output
- DMX-RDM data input and Thru output
- Recommended power feed: 120 VAC/4 A, 230 VAC/2 A Class I apparatus (2-wire, plus earth/ground)
- Fitted with 10A IEC panel-mounted appliance inlet connector
- Inrush current 120 VAC/35 A, 230 VAC/75 A (first half-cycle)
- IP44, for dry locations
- Dimensions 175x56x245 mm (6.75x2.25x9.75 in)

Alina Power System 600 (APS 600)

- Power and data supply for Alina lamp heads
- 600 W nominal rating
- Four lamp head outputs, each protected at 4 A with own fuse
- Fuse status indicator for each output
- Gate signal input
- Ethernet RJ45 10/100/1000 base T input accepting sACN protocols
- Recommended power feed: 120 VAC/5 A, 230 VAC/3 A. Class I apparatus (2-wire, plus earth/ground)
- Fitted with 20 A Neutrik powerCON® panel-mounted appliance inlet connector
- Inrush current 120 VAC/35 A, 230 VAC/75 A (first half-cycle)
- IP44, for dry locations
- Dimensions 283x285x83 mm (11.1x11.2x3.25 in), half-width two rack units

Alina Power System 1500 (APS 1500)

- Power and data supply for Alina lamp heads
- 1500 W nominal rating
- Eight lamp head outputs, each protected at 4 A with own fuse
- Two supplementary 20 A outputs to feed Remote Distribution Boxes
- Fuse status indicator for each output
- Gate signal input
- Ethernet RJ45 10/100/1000 base T input accepting sACN protocols
- Recommended power feed: 120 VAC/15 A, 230 VAC/7 A. Class 1 apparatus (2-wire plus earth/ground)
- Fitted with 20 A Neutrik powerCON panel mounted appliance inlet connector
- Inrush current 120 VAC/30 A, 230 VAC/45A (first half-cycle)
- IP44, for dry locations
- Dimensions 403x414x88 mm, 15.9x16.25x3.5 in, 2U rack (does not include mounting hardware)

PHYSICAL AND ELECTRICAL INFORMATION

Alina Distribution Box

- Distribution Box to feed up to 8 Alina lamp heads
- 1200 W nominal rating when fed from a suitably rated APS unit
- Single 20 A input on combined power/data cable
- Eight individual outlets, each protected at 4 A with own fuse
- Fuse status indicator for each output
- Internal auto-termination for DMX-RDM (n.b. Cables from the Alina Distribution Box to an Alina lamp head are each limited to 3 m (9 ft 10 in) maximum length
- IP67, for wet locations
- Dimensions 200x200x75 mm, 8x8x3 in, with mounting flanges

ENVIRONMENTAL INFORMATION

Alina Lamp Head and Distribution Box

- -10°C–45°C (14°F–113°F) ambient
- 0–100% relative humidity, including condensing, non-corrosive
- Ingress: minimum IP65
- Suitable for wet locations

Alina Power System (APS 600/1500/3000)

- -10°C–45°C (14°F–113°F) ambient
- 0–90% relative humidity, non-condensing (**NOTE**: Where dewing is anticipated please consult your RAYN Growing Systems provider)
- Ingress: IP44, for indoor use only

Regulatory and Compliance

- UL Listed
- FCC Part 18 and other relevant parts
- CE compliant, EN60598-1, EN60598-2-1, EN62471, EN55015, EN61547 & EN61000-3-2

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